

**REMARKS**

Reconsideration and allowance of the subject application are respectfully requested.

As an initial matter, Applicants note that the Examiner has provided an initialed copy of the PTO-1449 forms submitted with the Information Disclosure Statements filed on October 9, 2003 and February 4, 2004. However, on the PTO-1449 form submitted with Information Disclosure Statement filed on October 9, 2003, the Examiner has not initialed the other documents citation entitled "Japan Notice of Refusal and English translation." Consideration of this document with an initial next to the item on the PTO-1449 form with a copy evidencing same is requested.

Applicants note with appreciation the Examiner's acknowledgement of the foreign priority claim and receipt of the certified priority documents.

The Examiner notes an informality in claim 5 which has been overcome by changing the dependency of claim 5 from claim 1 to claim 2. Withdrawal of the rejection is respectfully requested.

Claims 1 and 16 stand rejected under 35 U.S.C. §102(b) as being anticipated by Inoue (JP 59-178189). This rejection is respectfully traversed.

To establish that a claim is anticipated, the Examiner must point out where each and every limitation in the claim is found in a single prior art reference. *Scripps Clinic & Research Found. v. Genentec, Inc.*, 927 F.2d 1565 (Fed. Cir. 1991). Every limitation contained in the claims must be present in the reference, and if even one limitation is

missing from the reference, then it does not anticipate the claim. *Kloster Speedsteel AB v. Crucible, Inc.*, 793 F.2d 1565 (Fed. Cir. 1986). Inoue fails to satisfy this rigorous standard.

Inoue describes a laser processing device in which processing fluid is "supplied to the object to be processed so that the cooling and removal of the processed layer can be performed effectively." See page 4, lines 3-5 of the English translation. The purpose of this processing fluid is explained on page 10, lines 19-20 of the translation:

The processing fluid that is provided with the ultrasonic wave oscillation energy has improved cooling effect.

Inoue uses a liquid jet to cool and clean away the debris away from the laser etching. Like all thermal etching methods, with or without thermal deformation, Inoue's etching produces shoulder-like structures on either side of the etch. Examples of such etching "rims" are shown in Figures 2b and 4b of the instant application.

The substrate patterning method recited in claim 1 does not suffer from such drawbacks. Inoue fails to disclose:

directing laser energy from a laser through the film to etch the substrate surface, the laser energy causing laser-induced sonic cavitation of the liquid film which etches the substrate and avoids formation of shoulder-like structures at a rim of irradiated portions of the substrate surface.

Lacking these features and characteristics, the anticipation rejection based upon Inoue should be withdrawn.

The Examiner maintains the rejection of claims 1-10 and 12-16 under 35 U.S.C. §103 as being unpatentable over Gupta in view of Douglas. All the claims remain

rejected under 35 U.S.C. §103 as being unpatentable over Gupta in view of Douglas and allegedly admitted prior art. These rejections are respectfully traversed.

As recognized by the Examiner, Gupta fails to disclose "forming a liquid film on the substrate surface." Gupta also fails to disclose the features quoted from claim 1 above.

Douglas fails to remedy Gupta's deficiencies. First, Douglas does not teach laser-induced sonic cavitation, either for etching or for avoiding formation of shoulder-like structures at the rim of the etched  $\text{CaF}_2$  surface. Second, as pointed out in the last response and as admitted by the Examiner, Douglas fails to teach carrying away the etched material by evaporation of the film during etching, as recited in claim 1. Instead, Douglas describes carrying away the etched material by active chamber evacuation or by rinsing with water.

In the Examiner's "response to arguments," the Examiner nonetheless argues that there must be some degree of evaporation. The Examiner then attempts to bootstrap this inference, drawn without support from Douglas, into an argument that the claim limitation is met because the active evacuation from Douglas removes "what remains in the chamber atmosphere from the evaporation during etching." That is not what is claimed. The etched material is "carried away from the substrate surface via evaporation of the film during said etching." Even assuming there is evaporation in Douglas, for purposes of argument only, there is no teaching in Douglas that this evaporation carries away etched material. Instead, Douglas clearly states that the etched material is carried

away<sup>4</sup> by active evacuation, not by evaporation, after etching is done. See, e.g., column 5, lines 30-31, which states that irradiation occurs from the arc lamp for five minutes, and thereafter, the chamber is evacuated or rinsed with water.

The Examiner fails to address the fact that there is improper motivation to combine Douglas and Gupta as proposed by the Examiner. It was in the context of this improper motivation that Applicants raised the point that Douglas explicitly teaches that the substrate beneath the CaF<sub>2</sub> surface is not etched. For example, column 3, lines 59-61 state:

An important point to note about the present invention is that the etch is preferential to CaF<sub>2</sub> and *does not etch the Si substrate beneath*. (Emphasis added).

The point avoided by the Examiner is that a person of ordinary skill of the art would understand that Douglas's explicit teachings are limited to photo-stimulated etching of *only* CaF<sub>2</sub>, and therefore, that person would be *taught away from combining* Douglas's etching method, in which the substrate is purposely protected from etching, with Gupta's substrate etching technique. Because Douglas excludes the possibility of etching the substrate, it is improper to combine Douglas with Gupta, whose very goal is to etch the substrate. See *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

Nor does the Examiner address the fact that neither Gupta nor Douglas address the problem confronted by the instant inventor. The Federal Circuit has indicated that the problem confronted by an inventor *must* be considered in determining whether it would have been obvious to combine references in order to solve that problem. *In re Northern*

*Telecom Inc. v. Datapoint Corp.*, 908 F.2d 931, 934 (Fed. Cir. 1990). In this case, the inventors recognized the problem with certain etching techniques which resulted in undesirable, shoulder-like structures being formed at the rim of the laser irradiated portions of the substrate. Neither Gupta nor Douglas appreciate this problem with laser etching. In an non-obviousness analysis, the Examiner is not permitted to dismiss these considerations without any contrary evidence. The Examiner provides no evidence to support the assertion that the "claimed invention is deemed not novel or obvious." While the problem addressed by the inventor may not be relevant in an anticipation context, the rejection made by the Examiner based upon Gupta and Douglas is an obviousness inquiry. In that case, the Federal Circuit has clearly stated the problem confronted by the inventor must be considered. The failure by either Gupta or Douglas to appreciate the formation of shoulder-like structures at the rim of the etched surface is a clear indicator of nonobviousness.

Thus, the obviousness rejection based upon Gupta and Douglas is deficient for a number of reasons and should be withdrawn.

Claims 1, 7-10 and 12-16 stand rejected under 35 U.S.C. §103 as being unpatentable over Inoue in view of Gupta et al. Claims 1, 11 and 16 stand rejected under 35 U.S.C. §103 as being unpatentable over Inoue in view of admitted prior art. Neither Gupta nor the allegedly admitted prior art on page 2, lines 6-20 remedy the deficiencies of Inoue noted above. These rejections are respectfully traversed.


SONG et al.  
Appl. No. 10/078,382  
July 15, 2004

The application is in condition for allowance. An early notice to that effect is earnestly solicited.

Respectfully submitted,

**NIXON & VANDERHYE P.C.**

By:

  
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John R. Lastova  
Reg. No. 33,149

JRL:at  
1100 North Glebe Road, 8th Floor  
Arlington, VA 22201-4714  
Telephone: (703) 816-4000  
Facsimile: (703) 816-4100